

## REMARKS

Entry of the foregoing, and reexamination and reconsideration of the subject application, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the comments which follow, are respectfully requested.

By the foregoing amendments, the chemical structural formula for the group A has been corrected to remove a typographical error. As may be noted, the oxygen group has been repositioned to depict a carbonyl group. Support for this amendment obviously follows from the formula itself, since the central carbon atom would not be "hexavalent". The corrected formula is also clearly present in the priority document (EP 1 178 092, copy attached) at, e.g., page 4, lines 9-19 and in claim 1. Certain preferences have also been deleted from claims 1, 2, 7 and 8. Accordingly, claims 20-25 are added to include these features as new dependent claims. Other amendments are entered to address the Examiner's concerns, or to otherwise place the claims in better condition according to US patent practice.

Turning to the Official Action, claims 1-19 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicants respectfully traverse these rejections for at least the following reasons.

By the foregoing amendments, the chemical structure depicted in claim 1 for "A" has been corrected. Applicants respectfully note that this is an obvious error, and that one skilled in the art would recognize the correction according to the amendment as being proper.

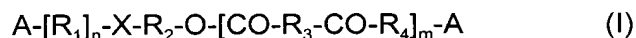
With regard to the recitation of certain claimed preferences, the Markush group language of claims 2 and 9 and the use of the terms "obtainable" and "preparable", Applicants respectfully note that the foregoing amendments should obviate the Examiner's concerns.

As for the "optional" substitution of  $R_2$  and  $R_3$ , it is noted that this language simply means that these groups may carry substituents. Of course, there must be sufficient "room" for such substituents to be present, as appears to be suggested by the Examiner. While it may be possible for some theoretical substituents to hinder the presence of other possible

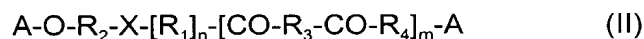
theoretical substituents, Applicants submit that there is sufficient "room" for these groups to be optionally substituted. Clearly, those substituents that are not possible substituents for some reason are not intended.

For at least the foregoing reasons, the claims are clear within the meaning of the second paragraph. Withdrawal of the second paragraph rejections is requested.

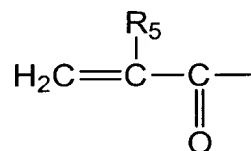
Applicants' invention relates to (meth)acrylic ester binders and binder comprising compositions and the synthesis of such binders from polyesters. As set forth in independent claim 1, for example, the binder may comprise oligomers according to formula (I) and/or (II):



and/or



wherein A represents



and the other substituents being defined in the claim. Binder comprising compositions, e.g. in the form of adhesive, coating, flooring, mortar, or casting compound(s) are also claimed. Formulations and methods of preparing the binder and its use are also claimed.

Claims 1-19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Rao et al (U.S. Patent No. 5,252,615). Applicants respectfully traverse these rejections for at least the following reasons.

Rao et al relates to coating compositions derived from alcoholysis of polyethylene terephthalate. See the Abstract.

Applicants note that Rao et al corresponds to EP 0558905 mentioned in the specification at page 6, lines 3-13. Applicants submit that Rao et al fails to anticipate Applicants claims for at least the following reasons.

The coating of Rao et al is a physically drying coating that comprises the reaction product of PET subjected to alcoholysis followed by a reaction with carboxylic acids or anhydrides. The resulting product is a low-molecular weight polyester. At column 6, line 46 et seq, it is further mentioned that this polyester may be subjected to direct acrylic modification.

However, Rao et al fails to mention the use of acrylic or methacrylic acid. For example, at column 6, lines 49-53 and column 6, line 63 to column 7, line 44, Rao et al notes a variety of carboxylic acids and anhydrides, but does not disclose the use of acrylic or methacrylic acid. One skilled in the art would not apparently envision the use of acrylic or methacrylic acid based upon the acids/anhydrides mentioned by Rao et al. As such, Rao et al fails to anticipate Applicants' claims.

Applicants further respectfully note that the term "direct acrylic modification" in Rao et al applies to copolymerization of acrylic monomers in the presence of the alcoholized polyester, not acrylic modification of the alcoholized PET itself according to their claims. More particularly, as disclosed at, e.g., column 8, line 38 to column 9, line 15, and example VI at column 11, the polyesters may be utilized as stabilizing media for the "polymerization of acrylic and other ethylenically unsaturated monomers" (column 8, lines 40-42). U.S. Patent Nos. 4,735,995 and 4,873,281, mentioned by Rao et al at column 9, line 13, and in the Official Action, furthermore relate to the copolymerization of acrylic monomers in the presence of a polyester and the combination of a copolymerized vinyl polymer with a polyester, respectively, not the reaction of acrylic or methacrylic acid with an hydroxyl-containing polyester according to the binder of Applicants' claims. Accordingly, Rao et al also fails to anticipate Applicants' claims even if considered in conjunction with the disclosures of these additional patents.

For at least the foregoing reasons, the claims are not anticipated by Rao et al. Withdrawal of the § 102(b) rejections is requested.

Claims 1-19 stand rejected under 35 U.S.C. § 103(a) as being anticipated by Gerber et al (U.S. Patent No. 5,877,255) in view of EP 0 514 147 (EP'147). Applicants respectfully traverse these rejections for at least the following reasons.

Gerber et al relates to a binder produced by a reaction of aromatic polyesters with polyols and subsequent esterification of the products with fatty acids carrying hydroxyl groups. After-esterification with dicarboxylic acids is also mentioned as an optional step (e.g. column 5, lines 3-6 and 63-65).

EP'147 relates to a solid photocurable film adhesive composition comprising a photocurable material at least 20% by weight being a urethane acrylate, a polyester acrylate or a mixture of a urethane acrylate and a polyester acrylate, a solid polyvinylacetal and a photoinitiator for photopolymerisation of acrylic compounds. Hydroxyl-terminated polyesters may furthermore include reaction products of dihydric alcohols with a stoichiometric deficiency of dicarboxylic acids or their anhydrides.

The present claims are patentable over the proposed combination of Gerber et al in view of EP'147 since the combination, as set forth in the Official Action, fails to suggest the claimed invention.

More particularly, Applicants note that their claims are directed to a binder comprising an oligomer with two (meth)acrylic groups according to formula (I) and/or (II). This binder is prepared by reacting the polyester carrying two terminal hydroxyl groups with acrylic or methacrylic acid. Gerber et al and EP'147, however, fail to disclose or suggest the use of acrylic or methacrylic acid according to Applicants' claimed invention.

The combination of Gerber et al with EP'147 would also not be relied upon by the skilled artisan since each is directed to a different area of technology and are not obviously combinable. For example, Gerber et al is concerned with preparing polyhydroxyl compounds suitable for polyurethane synthesis for applications such as floor coverings and coatings. On the other hand, EP'147 is directed to photocurable adhesives useful for laminate applications (such as for security/identity cards). Based at least in part upon these different technology areas, there is no apparent reason for the skilled artisan to look to EP'147 to provide a particular modification of Gerber et al's invention. As well, there is no apparent reason to rely

upon EP'147 to provide a particular solution to a specific problem associated with the invention of Gerber et al.

In the Official Action, it is asserted that it would be allegedly obvious "to esterify the products of Gerber et al with acrylates . . . in order to enable the final, acrylic-modified coating product to be reducible in water or other aqueous systems". Applicants respectfully disagree and submit that EP'147 and Gerber et al do not support this conclusion.

As noted above, Gerber et al is concerned with preparing polyhydroxyl compounds suitable for polyurethane synthesis. Any proposed modification of this compound would therefore still need to be suitable to prepare a polyurethane (e.g. for coatings, such as floor coverings) according to Gerber et al. Therefore, even if EP'147 suggested the use of (meth)acrylic acid, (which, as noted above, it does not) the proposed modified polyhydroxyl compounds would still need to be suitable according to Gerber et al's invention (see, e.g., MPEP 2143.01, advising that a proposed modification cannot render the prior art unsatisfactory for its intended purpose). Nothing in each of these documents suggests that this would be the case, however.

Moreover, the stated motivation in the Official Action to render the "acrylic-modified coating product reducible in water or other aqueous systems" would seem to be contrary to the purpose of Gerber et al to provide reactive polyurethane suitable for coatings, particularly floor coverings, which have "good chemical resistance" (column 1, lines 12-15 and column 2, lines 56-63).

It is further respectfully noted that EP'147 and Gerber et al do not evidently suggest as a "motivation" that it would allegedly be obvious to provide an acrylic-modified coating that is "reducible in water or other aqueous systems". Instead, neither document appears to explicitly disclose nor suggest such a proposed modification or effect. As such, the Official Action fails to set forth a proper and supported motivation for making a modification of the invention of Gerber et al according to Applicants' claims.

There is also no apparent expectation of success is somehow making the proposed modification. As such, Applicants' claims are patentable over the applied documents at least for the reason that Gerber et al and EP'147 fail to disclose or suggest each feature of Applicants' claims and do not provide a proper motivation or expectation of success in making the proposed modification.

Applicants further generally note that their claimed invention provides certain non-obvious advantages over Gerber et al and EP'147. For example, by incorporating two acrylic end groups, their binder is may be cured quickly while producing low odor, and providing excellent mechanical properties, good weather and chemical properties and low shrinkage.

For at least the foregoing reasons, the claims are patentable over Gerber et al in view of EP 0 514 147. Withdrawal of the § 103(a) rejections is requested.

If any issues remain outstanding, or should the Examiner have any questions concerning the foregoing amendments and remarks, she is respectfully invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By:

  
Mark L. Warzel  
Registration No. 47,264

P.O. Box 1404  
Alexandria, VA 22313-1404  
(703) 836-6620

Date: February 3, 2003

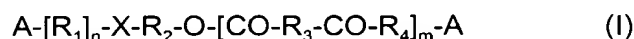
**Attachment to Amendment filed February 3, 2003**  
**Marked-up version of the specification and Claims 1-4, 7-9, 11 and 18**

---

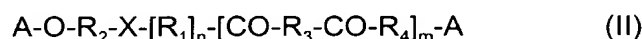
**IN THE SPECIFICATION:**

**Replace the paragraph beginning at page 6, line 24 and ending at page 8, line 3, with the following:**

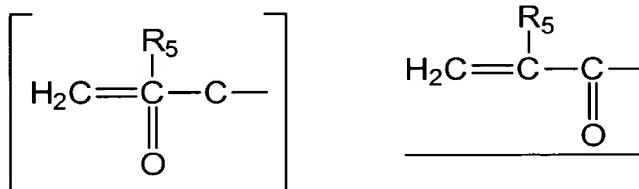
Now, in order to implement these and still further objects of the invention, which will become more readily apparent as the description proceeds, the (meth)acrylic ester binders of the present invention are manifested by the features that they are mixtures of oligomers, said oligomers comprising those of the following formula



and/or



wherein A represents



CO is carbonyl group

$R_1$  is a repetition unit of an aromatic polyester, in particular a repetition unit of PET and/or PEN,

$R_2$  is a divalent radical selected from the group consisting of optionally substituted linear and branched  $C_3$ - $C_{20}$  alkylen, cycloalkylen and aralkylen radicals, optionally substituted di-, tri- or tetraalkylenether radicals, and optionally substituted heterocyclic radicals, preferably such radicals derived from the alcohols or aminoalcohols mentioned above, whereby said substituents are preferably selected from the group consisting of hydroxy groups, ester groups and alkyl group,

$R_3$  is a divalent radical selected from the group consisting of optionally OH or COOH substituted linear and branched aliphatic and aromatic and araliphatic radicals, in particular radicals with 3 to 14 C atoms



$R_5$  is hydrogen or methyl group

X is -O- or -NH-, and

n is 1 to 4, and

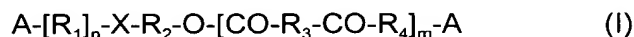
m is 0 to 3.

**Attachment to Amendment filed February 3, 2003**  
**Marked-up version of the specification and Claims 1-4, 7-9, 11 and 18**

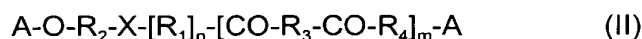
---

**IN THE CLAIMS:**

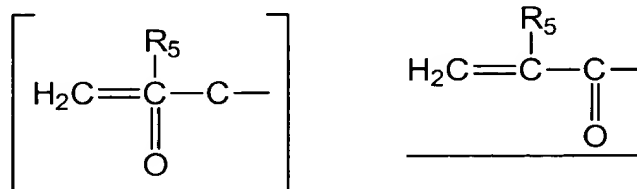
1. (amended) Methacrylate or acrylate binder comprising oligomers of the following formula (I) and/or (II)



and/or



wherein A represents

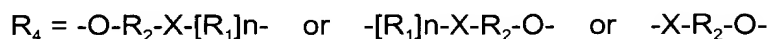


CO is carbonyl group

R<sub>1</sub> is a repetition unit of an aromatic polyester, [in particular a repetition unit of PET and/or PEN,]

R<sub>2</sub> is a divalent radical selected from the group consisting of [optionally substituted] linear and branched C<sub>3</sub>-C<sub>20</sub> alkylen, cycloalkylen and aralkylen radicals, [optionally substituted] di-, tri- or tetraalkylenether radicals, and [optionally substituted] heterocyclic radicals, wherein said radicals may be optionally substituted, [whereby said substituents are preferably selected from the group consisting of hydroxy group, ester group and alkyl group,]

R<sub>3</sub> is a divalent radical selected from the group consisting of [optionally OH or COOH substituted] linear and branched aliphatic and aromatic and araliphatic radicals, wherein said radicals may be optionally substituted with OH or COOH groups, [in particular radicals with 3 to 14 C atoms]



R<sub>5</sub> is hydrogen or methyl group

X is -O- or -NH-, and

n is 1 to 4, and

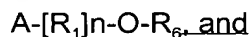
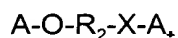
m is 0 to 3.



**Attachment to Amendment filed February 3, 2003**  
**Marked-up version of the specification and Claims 1-4, 7-9, 11 and 18**

---

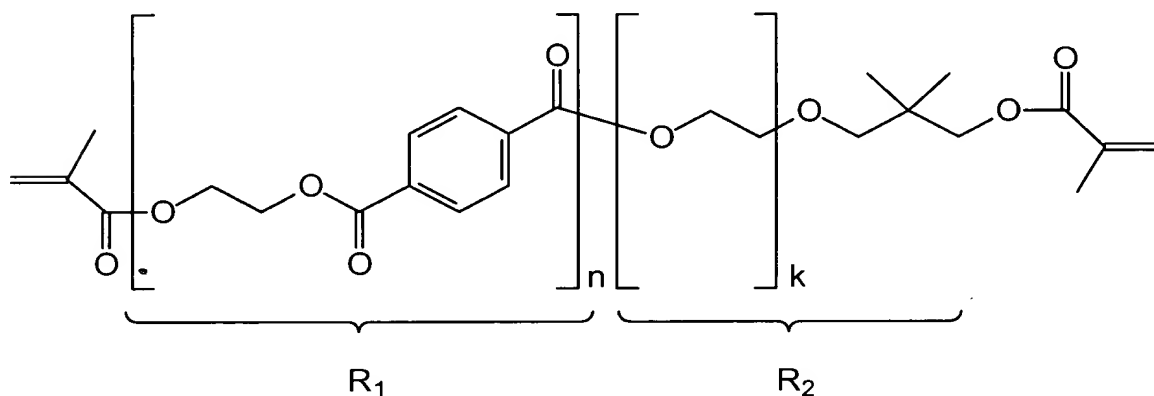
2. (amended) The binder of Claim 1 that further comprises at least one compound selected from the group consisting of



wherein A, R<sub>1</sub> and R<sub>2</sub> are as defined [above] in Claim 1, and

R<sub>6</sub> is a linear or branched aliphatic or aromatic or araliphatic radical [, in particular a radical with 5 to 22 C-atoms].

3. (twice amended) The binder of claim 1 that comprises the oligomer represented by



wherein R<sub>1</sub> is a repetition unit of PET,  
R<sub>2</sub> is an ethoxylated neopentyl glycol derived radical,  
n is 1 to 4, and  
k is 1 to 3.

4. (twice amended) The binder of Claim 1 that is [obtainable] obtained by the steps of (i) generating hydroxy terminated binder precursor oligomers (OH-precursors) derived from at least one aromatic polyester, and (ii) reacting said OH-precursors of step (i) with methacrylic acid and/or acrylic acid to form a respective ester, whereby step (i) comprises reacting an aromatic polyester, or a mixture of aromatic polyesters with at least one polyol and/or at least one aminopolyol to generate hydroxy terminated oligomers.

**Attachment to Amendment filed February 3, 2003**  
**Marked-up version of the specification and Claims 1-4, 7-9, 11 and 18**

---

7. (twice amended) The binder of Claim 4, which is [preparable] prepared using as polyol at least one diol, at least one triol or a mixture thereof [, preferably a polyol selected from the group consisting of diethylene glycol, ethoxylated neopentyl glycol, di-(2-hydroxyethyl)-5,5-dimethylhydantoin, 1,3-dimethylol-5,5-dimethylhydantoin, tri-(2-hydroxyethyl)-isocyanurate, hydroxyalkyl isocyanurates, and mixtures thereof].

8. (twice amended) The binder of Claim 4, which is [preparable] prepared using a mixture of at least one polyol and/or at least one aminoalcohol and at least one monofunctional alcohol, [preferably a monofunctional alcohol selected from the group consisting of C<sub>5</sub>-C<sub>22</sub> linear saturated alcohols, C<sub>5</sub>-C<sub>22</sub> linear unsaturated alcohols, C<sub>5</sub>-C<sub>22</sub> branched saturated alcohols, C<sub>5</sub>-C<sub>22</sub> branched unsaturated alcohols, and mixtures thereof, more preferably a monofunctional alcohol selected from the group consisting of 4-methyl-1-pentanol, hexanol, lynoleyl alcohol, benzyl alcohol, trimethylolpropane diallylether, allyl alcohol, nonanol, and mixtures thereof].

9. (twice amended) The binder of Claim 7, wherein the alcohol is selected from monohydroxy functional or dihydroxy functional polymers or oligomers selected from the group consisting of polyethers, polyesters, polyurethanes, polycaprolactones [or] and mixtures thereof.

11. (twice amended) The binder of Claim 4, wherein said OH-precursors of step (i) that are further reacted in step (ii) are [obtainable] obtained by further reacting said hydroxy terminated oligomers with at least one polycarboxylic acid and/or at least one polycarboxylic anhydride.

18. (twice amended) [Use of a binder of Claim 1 as or in an] An adhesive, coating, flooring, mortar, or casting compound comprising the binder of Claim 1.